

A New Species of *Agama* (Sauria: Agamidae) from Northern Pakistan

Khalid Javed BAIG

Pakistan Museum of Natural History
Al-Markaz F-7, Block 2, Islamabad (Pakistan)
(Received February 28, 1989)

Abstract A new species of the genus *Agama* is described from Gilgit, Federal Administered Northern Areas (FANA) of Pakistan. The species is compared with two closely related species, *Agama agorensis* (STOLICZKA) and *Agama melanura* (BLYTH), on the basis of number of labials, body scales, callose scalation and colour. The distribution of the species in the area is also outlined.

Key Words: Reptilia, Sauria, Agamidae, *Agama*, Systematics, New species, Pakistan.

INTRODUCTION

Some of the workers (BOULENGER, 1890; MINTON 1962, 1966; ANDERSON and MINTON, 1963 and MERTENS, 1969, 1970, 1971, 1974) studied the herpetology of Pakistan. Later on KHAN (1972, 1976, 1977 and 1980) added more to the knowledge about the herpetology of this area. Besides the anurans study (BAIG, 1988) no extensive field work has been conducted in the mountains of northern Pakistan. However, NIKOLSKII (1915), TERENT'EV and CHERNOV (1949), LEVITON (1959), LEVITON and ANDERSON (1961, 1963, 1970), ANDERSON and LEVITON (1967, 1969), CLARK *et al.* (1969) and ANANJEVA (1980) studied the herpetology of Afghanistan and Russia, the areas adjoining northern Pakistan. The present work is based on a collection made in Gilgit (FANA) and surrounding areas. The collection is housed in the Pakistan Museum of Natural History, Islamabad. The study is an outcome of two expeditions to the area, one was made in August, 1986 and the second through the courtesy of "Operation Raleigh Expedition 87", sponsored by Pakistan Science Foundation, Pakistan Museums of Natural History and Adventure Foundation of Pakistan, in September 1987.

SYSTEMATIC ACCOUNT

Agama pakistanica sp. nov. (Plate 1, Figs. 1-3)

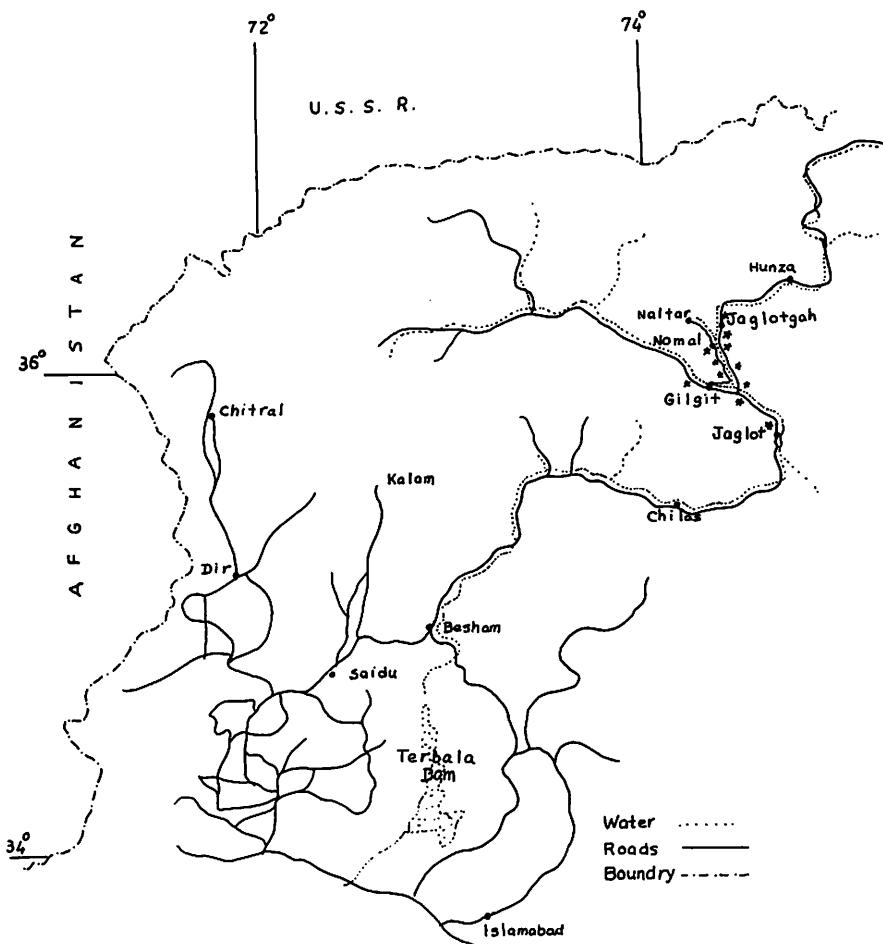
Holotype: PMNH 0134, a male, collected from Jaglotgah (Gilgit; FANA) 36°20'N,

74°50'E, elevation 2,100 m, on August 6, 1986.

Paratypes: PMNH 0135, a female, collected with the holotype. PMNH 0155-0157, all females, collected from Nomal (Gilgit; FANA) 36°05'N, 74°15'E; el. 1800 m, on September 29, 1987. PMNH 0220, a female, collected from the type locality on September 30, 1987. PMNH 0221, a juvenile collected along with PMNH 0220.

Diagnosis: This species is most closely related to *A. agroensis* and *A. melanura*. The jet black colour, number of labials, body and callose scalation suggest that it is neither *agroensis* nor *melanura* or any other species of *Agama*.

Description of holotype: Head triangular viewed from above, depressed; nostrils on canthus rostralis, pointing outwards; upper head scales subequal, smooth or obtusely keeled; upper labials 12/13, lower labials 13; large spinose scales present on



Text-figure 1. Sites where the species is collected or observed; indicated by asterisks.

Table 1. Comparison of several species of the genus *Agama*

No.	Characters	<i>pakistanaica</i> , sp. nov.	<i>agrorensis</i> (STOLICZKA)	<i>melanura</i> (BLYTH)
1.	Head scales	smooth	keeled	smooth or keeled
2.	Upper labials	11-13	9-10	12-16
3.	Mid-dorsal scales	8 longitudinal rows of spinose, independent scales; median rows small	10 longitudinal rows of keeled, overlapping scales; median rows small	12 smooth or slightly keeled scales, no longitudinal rows; median scales largest
4.	Scales on flanks	patch of enlarged, distant spinose scales	patch of enlarged, adjacent keeled scales	no enlarged spinose or keeled scales
5.	Callose preanal scale rows	3 in female and 6 in male	2 in female and 4 or more in male	4 or 5 in male only
6.	Scales around the tail	40	34	25
7.	Tail segments	3	3	4 or 5
8.	Callose abdominal scales	small patch present in male and rarely in female	less often present in male only	large patch in male only
9.	Colour	uniform jet black; head black speckled with orange or pale yellow below; lower parts dark gray speckled with orange or pale yellow	dark olive with yellow or white longitudinal lines and transverse broken bars yellow spots or reticulation on head; ventrally whitish but head with black reticulation	brown, uniform or with light spots; head yellow brown; belly, limbs and tail pale brown; posterior half of tail black
10.	Size (Maximum snout-vent length)	relatively large	relatively small	relatively small

neck and posterior sides of head; those on neck and around tympanum arranged in groups, whereas a series of these scales start below the level of the angle of jaw and extends to the level of tympanum; median dorsal scales enlarged, strongly mucronate, 8 rows across the middle of the back, two vertebral rows smaller than the lateral ones; a patch of enlarged, spinose scales present on flanks; other dorsal scales very small; ventral scales smaller than enlarged dorsals, but considerably larger than dorsals; gular scales smaller than ventrals; skin of neck and sides of the body loose, forming a gular and dorso-lateral folds; spinose scales present on posterior half of dorso-lateral fold. Limbs strong; hind-limbs reaching ear. Tail depressed, oval with distinct tail segment of 3 whorls, 40 at level of 5th whorl, those above and on sides of tail strongly mucronate, those below flat. Callose preanal and abdominal scales present, 6 rows of callose preanal and small patch of callose abdominal scales.

Colour jet black above; chest, neck and throat speckled with orange; belly and lower side of tail dark grey, groin region speckled with yellow.

Measurements of holotype (mm): SVL 150.0, tail 240.0+broken tip, head length 43.0, head width 38.0, tympanum diam. 6.0, eye width 6.0 and hind limb 65.0.

Paratypes: The paratypes agree with the holotype in all characters except for the number of labials which varies from 11 to 13 and mid-dorsal enlarged scales which

vary from 8 to 10. The paratypes are all females (one juvenile PMNH 0221) and are smaller than the holotype which is a male. The proportion of head length to width is 1.13 in the holotype whereas 1.27–1.45 in the paratypes. The rows of callose preanal scales are three in the paratypes whereas these are six in the holotype. Callose abdominal scales are less often present (only in female PMNH 0135). PMNH 0157, 0220 and 0221 have some faded dorsal pattern, and their bellies are whitish which is more pronounced in PMNH 0221 (juvenile).

Table 2. Measurements of paratypes (mm)

PMNH No.	Sex	SVL	Tail	Head length	Head width	Hind limb	Follicles in one oviduct
0155	♀	112.0	180.0	32.0	22.0	56.0	3 (7 mm)+6 small
0156	♀	120.0	256.0	39.0	29.0	61.0	5 (7 mm)+6 small
0157	♀	102.0	178.0	32.0	24.0	53.0	3 (7 mm)
0220	♀	97.0	215.0	28.0	22.0	50.0	3 (7 mm)+6 small
0135	♀	127.0	119.0	35.0	26.5	55.0	9 small
0221	Juv.	38.0	92.0	14.0	10.0	20.0	

Remarks: The presently described new species is not gregarious and lives singly or in pairs. It lives in rocky mountains and can be observed basking on rocks or clinging to cliffs in bright sunny days. Analysis of gut contents indicates that it is omnivorous, feeding on herbs and insects (mostly beetles).

Although the morphometric data presented in this paper are only for 7 specimens but my observations regarding its distribution, habits and habitat are based on much more specimens observed in the area. The reason for the limited number is that this species takes advantage of its habitat and takes refuge into crevices even after it is shot with an air gun. The species was collected or observed within the radius of about 40 km from Gilgit. It was usually found in dry, barren rocky mountains away from human settlements. Collection of a juvenile in September and presence of mature follicles in oviduct of females suggest that June–September is probable breeding season of this species.

Colour variation is also observed in this species but it seems to be related with age. Juvenile (PMNH 0221) has dorsal pattern and is whitish below. The pattern becomes faded and black marbling and reticulation appear on ventral side in younger specimens (PMNH 0220, 0157). Older and mature specimens have pattern similar to that of original description already given.

Acknowledgements: I thank Dr. Walter AUFFENBERG, Florida State Museum, U.S.A., who not only encouraged me in this study but also very critically read the first draft of the description and helped me with his valuable suggestions. I am also thankful to Dr. A. E. LEVITON, California Academy of Sciences, U.S.A. for his able guidance in preparing this manuscript. I acknowledge my thanks to Prof. M. S.

KHAN, Rabwah, Pakistan, who very kindly studied the specimens and suggested that it could be different from all previously reported *Agama* and might be new to science. My thanks are also due to all my colleagues and venturers of Operation Raleigh Expedition 87, who assisted me in collecting this species.

Literature Cited

ANANJEVA, N. B. 1980. Besonderheiten im bau des Schädels, Gebisses und Zungenbeins der in der UdSSR vorkommenden Agamen (Lacertilia, Agamidae: *Agama*). *Mitt. zool. Mus. Berlin*, **56** (2): 295-308.

ANDERSON, J. A. and S. A. MINTON, Jr. 1963. Two noteworthy herpetological records from the Thar Parkar Desert, West Pakistan. *Herpetologica* **19**: 152.

ANDERSON J. A. and A. E. LEVITON 1967. A new species of *Phrynocephalus* (Sauria: Agamidae) from Afghanistan, with remarks on *Phrynocephalus ornatus* Boulenger. *Proc. Calif. Acad. Sci.*, ser. 4, **35**: 227-234.

ANDERSON, S. C. and A. E. LEVITON 1969. Amphibians and reptiles collected by Street Expedition to Afghanistan, 1965. *Proc. Calif. Acad. Sci.*, ser. 4, **37** (2): 25-56.

BAIG, K. J. 1988. Anurans (Amphibia) of northern Pakistan with special reference to their distribution. *Pak. J. sci. indust. Res.* **31** (9): 651-655.

BOULENGER, G. A. 1890. The Fauna of British India including Ceylon and Burma. *Reptilia and Batrachia*. London, 541 pp.

CLARK, R. J., E. D. CLARK, S. C. ANDERSON and A. E. LEVITON 1969. Report on a collection of amphibians and reptiles from Afghanistan. *Proc. Calif. Acad. Sci.*, ser. 4, **36** (10): 279-316.

KHAN, M. S. 1972. Checklist and key to lizards of Jhang District, West Pakistan. *Herpetologica* **28**: 94-98.

KHAN, M. S. and M. R. MIRZA 1976. An annotated checklist and key to the reptiles of Pakistan, Part I: Chelonia and Crocodilia. *Biologia* **22**: 211-219.

KHAN, M. S. and M. R. MIRZA 1977. An annotated checklist and key to the reptiles of Pakistan, Part II: Sauria (Lacertilia). *Biologia* **23**: 41-64.

KHAN, M. S. 1980. Affinities and zoogeography of herptiles of Pakistan. *Biologia* **26**: 113-171.

LEVITON, A. E., 1959. Report on a collection of reptiles from Afghanistan. *Proc. Calif. Acad. Sci.*, ser. 4, **29**(12): 445-463.

LEVITON, A. E. and S. C. ANDERSON 1961. Further remarks on the amphibians and reptiles of Afghanistan. *Wassmann J. Biol.* **19**: 269-276.

LEVITON A. E. and S. C. ANDERSON 1963. Third contribution to the herpetology of Afghanistan. *Proc. Calif. Acad. Sci.*, ser. 4, **31**: 329-339.

LEVITON, A. E. and S. C. ANDERSON 1970. The amphibians and reptiles of Afghanistan, a checklist and key to the herpetofauna. *Proc. Calif. Acad. Sci.*, ser. 4, **38**: 163-206.

MERTENS, R. 1969. Die Amphibien und Reptilien West-Pakistans. *Stuttg. Beitr. z. Naturk.* (197), 96 pp.

MERTENS, R. 1970. Die Amphibien und Reptilien West-Pakistans. 1. Nachtrag. *Stuttg. Beitr. z. Naturk.* (216), 5 pp.

MERTENS, R. 1971. Die Amphibien und Reptilien West-Pakistans. 2. Nachtrag. *Senckenb. biol.* **52**: 7-15.

MERTENS, R. 1974. Die Amphibien und Reptilien West-Pakistans. 3. Nachtrag. *Stuttg. Beitr. z. Naturk.* **55**: 35-38.

MINTON, S. A., Jr., 1962. An annotated key to the amphibians and reptiles of Sind & Las Bela, W.

Pakistan. *Amer. Mus. Novit.* 2081: 1-60.

MINTON, S. A., Jr., 1966. A contribution to the herpetology of West Pakistan. *Bull. Amer. Mus. nat. Hist.* 134: 29-184.

NIKOLSKII, A. M. 1915. Fauna of Russia and adjacent countries, vol. 1 (Reptiles: Chelonia & Sauria). Israel Programme for Scientific Translations, Jerusalem (1963).

TERENT'EV, P. V. and S. A. CHERNOV 1949. Key to Amphibians and Reptiles. Israel Programme for Scientific Translations, Jerusalem (1965).

A New Species of *Agama* (Sauria: Agamidae)
from Northern Pakistan

Khalid Javed BAIG

Plate 1

Explanation of Plate

Fig. 1. *Agama pakistanica*, sp. nov.
Holotype (PMNH 0134), dorso-lateral view indicating enlarged mucronate and spinose scales on the body.

Fig. 2. Dorsal view of *Agama pakistanica*, sp. nov., showing specific pattern of scales on the body.

Fig. 3. Ventral view showing callose scalation and tail segments.

